REMARKS/ARGUMENTS

1. Request for Continued Examination:

The applicant respectfully requests continued examination of the above-indicated application as per 37 CFR 1.114.

2. Claim rejections – 35 U.S.C. 103(a)

Claims 1, 3, 5, 12, 18 – 20, 22, and 29 were rejected under 35 U.S.C. 103(a) as being unpatentable over Kawai in view of Progar.

Response

Claim 1

Kawai discloses a method for compensating for a time discrepancy between a predetermined time interval and an actual time interval. Progar discloses a method for accumulating error values until they reach a certain threshold, then calibrating the timing system utilizing the accumulated error values. Claim 1 discloses a method wherein a first compensation value is calculated and used to decrease the gap between a count value and a threshold value, and if the count value **does not reach the threshold value** then a second compensation value will be calculated. Neither Kawai nor Progar disclose a system wherein errors are compensated before a threshold value is reached: "The data processing circuit 16 repeatedly reads a count of the clock timer 14 until it reaches the preset numerical value in steps T7, T8. When the count of the clock timer 14 reaches the preset numerical value, the data processing circuit 16 outputs low- and high-level signals successively to the external terminal 21 in the steps T5, T6" [Kawai, Col.9, lines 59 – 64]. "Each time, in this embodiment, that register 20 outputs a "minute" increment signal to register 27, microprocessor 12 generates a fractional error signal representing the time value of the fractional error associated with one minute (i.e., 1,792 microseconds) and selectively outputs this time value to accumulator 22" [Progar, Col.5, lines 19 – 24]. "Once the contained value exceeds a certain threshold value, accumulator 22 generates a signal to microprocessor12.....microprocessor 12, upon receiving the output signal from accumulator 22, also selectively and temporarily increments the threshold value of

register 20 by one, thereby requiring register 20 to count a whole number of 1832 interrupt signals before generating the next signal to register 27, thereby causing the clock assembly 10 to temporarily "run slower", thereby selectively correcting the accumulated fractional error deficiency which is substantially equal to the threshold value of register 22" [Progar, Col.5, lines 30 – 51]. Furthermore, Claim 1 can selectively determine one compensation value or many compensation values according to a comparison between the count value and the threshold value as supported by specification paragraph [0037]. This limitation would not be achieved by combining the prior arts of Progar and Kawai, as such a method of **selectively determining compensation values** is disclosed by neither. Furthermore, as the system is only updated if a threshold value is **not** reached, there is no motivation for utilizing the accumulation technique of Progar, as the accumulated errors of Progar are constant and known, and are only input to the system once a threshold is reached: "That is, processor 12 recognizes that each minute of time corresponds to the generation of about 1,831 interrupt signals and this calculated time or "minute" estimate has a "fractional error deficiency": which is substantially equal to the time associated with the generation of about 0.0546875 interrupt periods (i.e., using only the whole number of 1,831 interrupt periods to calculate the passage of a minute will cause the clock to be "fast" [Progar, Col.4, lines 36 – 43]. As can be seen from the specification, it is possible that the timer, having an imperfect accuracy, will output a first pair of interrupt signals that do not equal the predetermined time, then output accurately for the remainder of the time period. In such a case, correcting for the first time interval only (i.e. only calculating a single compensation value) will be sufficient to compensate completely for the time discrepancy, as can be seen from specification paragraphs [0036] and [0037]. If only the first time interval has an associated error, then no further compensation values need to be calculated..

Claims 3, 5, and 12

Claims 3, 5, and 12 are dependent on Claim 1, and should be found allowable if Claim 1 is found allowable.

Claim 18

Claim 18 has been amended to include the limitations where the tracking module tracks a first actual time interval, then selectively tracks a plurality of actual time intervals according to the count value. Combining Progar and Kawai would not result in this limitation as there is no limitation in either prior arts to suggest suspending tracking the actual time intervals during a certain predetermined interval of time (i.e. before the increment signal of Progar is output.) Moreover, Claim 18 further defines that the suspension of tracking the actual time intervals occurs when the count value reaches the threshold value, i.e. only **before the threshold is reached** will error compensation occur. There is therefore no motivation to combine the tracking of time intervals system of Kawai with the accumulated error values system of Progar, as Claim 18 does not disclose accumulating error values then inputting them to the system when a threshold is reached, and such a combination will not achieve the selective tracking of actual time intervals (and therefore the selective calculation of compensation values) according to a comparison result. The applicant therefore asserts that currently amended Claim 18 should overcome the obviousness rejection.

Claims 19, 20, 22, and 29

Claims 19, 20, 22, and 29 are dependent on Claim 18 and should be found allowable if Claim 18 is found allowable.

3. Claim rejections – 35 U.S.C. 103(a)

Claims 13, 15, 17, 30, and 34 were rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman in view of Progar.

Response

Claim 13

Claim 13 has been modified to include the limitations where calculation of each actual time interval is **only** calculated according to the count value. Therefore Claim 13 does not disclose continuous tracking of time intervals as suggested by a combination of Chapman and Progar: "an error value of about 1,792 microseconds (i.e., 0.0546875 interrupt periods x 32,678 microseconds per interrupt period) occurs

and will accumulate each time that an increment signal of one minute of time is output to register 27 at the end of each "countdown sequence" of register 20" [Progar, Col.5, lines 5 – 10]. "In determining an accumulated error value Δ , measurements are made to determine the difference between the actual fixed time period between interrupts from idle timer 26 and the ideal time period which would result from a crystal oscillator operating exactly at the designed frequency" [Chapman, Col.5, lines 27 – 32], but rather suggests selective tracking according to a comparison. Furthermore, if the count value reaches a threshold, the method will **not** perform error compensation, as supported by specification paragraphs [0027] and [0028]. Such a limitation is not suggested by a combination of Chapman and Progar, who both teach error compensation only when a threshold (the increment signal) is reached: "As a means for correcting the accumulated error in the interrupt signal from idle timer 26, the interrupts are counted down in countdown register 28 from a large number such as 1,000,000. The premeasured error of the crystal oscillator stored in EEPROM is in units of parts per million. This number is added to 6144 in block 5. When the countdown from the one million interval expires, the modified one minute interval count derived from adding the parts per million error to 6144 is loaded into reload value register 31" [Chapman, Col.4 line 67 – Col.5, line 8]. Furthermore, accumulation of error values is not taught nor suggested by Claim 13. Claim 13 teaches individually calculating error values and compensating the system with said error values. It can be appreciated that, as mentioned in the response to Claim 1 above, an event may occur where only one time interval needs correction, as Claim 13 discloses an **imprecise timer**. Therefore, no accumulation of error values will occur. Even in a system where many compensation values are calculated, however, each compensation value is still individually utilized to correct the count value – a limitation that is not achieved by a combination of Chapman and Progar. Applicant respectfully asserts that Claim 13 overcomes the obviousness rejection.

Claims 15 and 17

Claims 15 and 17 are dependent on Claim 13 and should be found allowable if Claim 13 is found allowable.

Claim 30

Claim 30 includes limitations where tracking of time intervals only occurs according to the count value, wherein if the count value reaches the threshold value, no tracking and therefore no error compensation will occur. Such a stage is not suggested by a combination of Chapman and Progar. Furthermore, individual determination of compensation values, and individual updating of the count value with said compensation values means there is no accumulation of error values. Both Chapman and Progar teach accumulating error values until a threshold (increment signal) is reached, then utilizing the accumulated values to error correct. The applicant therefore respectfully asserts that Claim 30 should be found allowable.

Claim 34

Claim 34 is dependent on Claim 30 and should be found allowable if Claim 30 is found allowable.

4. Claim rejections – 35 U.S.C. 103(a)

Claims 16 and 33 were rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman and Progar in view of Lode.

Response

Claims 16 and 33 are dependent on Claims 13 and 30 respectively. As the applicant believes both Claims 13 and 30 have been placed in a position for allowance according to arguments detailed under section 3., the applicant believes Claims 16 and 33 should also be found allowable.

5. Claim rejections – 35 U.S.C. 103(a)

Claims 1, 3, 5, 9, 11 – 13, 15, 17 – 20, 22, 26, 28 – 32, and 34 were rejected under 35 U.S.C. 103(a) as being unpatentable over Kawahara in view of Chapman and in further view of Progar.

Response

Claim 1

Claim 1's differences with respect to Progar are fully detailed in section 2. The applicant further asserts that combining Progar with Chapman would not result in the method detailed in Claim 1, as Chapman also does not disclose error compensation only when a threshold is not reached. Furthermore, Claim 1 does not disclose compensating a system with a plurality of accumulated values, but first compensates with a first value, performs a comparison, then uses the comparison for determining if a second compensation value needs to be calculated. As to Kawahara, a method is taught wherein an alarm is activated when a threshold is reached; however, combining Kawahara with Chapman and Progar would not result in the system disclosed in Claim 1, as the alarm would be used as a means of knowing when to error compensate with a plurality of accumulated signals, and not as a means of ending error compensation. In Claim 1, the acknowledgment signal is generated when the count value reaches the threshold value, at which point error compensation **ends**. Therefore, the applicant believes Claim 1 overcomes the rejection.

Claims 3, 5, 9, 11, and 12

Claims 3, 5, 9, 11, and 12 are dependent on Claim 1 and should be found allowable if Claim 1 is found allowable.

Claim 13

Claim 13's differences with respect to Chapman and Progar are fully detailed in section 3. As detailed above, utilizing the method wherein an alarm is activated when a threshold is reached would not result in the system disclosed in Claim 13, as the alarm would be used as a means of knowing when to error compensate with a plurality of accumulated signals, and not as a means of ending error compensation.

Claims 15 and 17

Claims 15 and 17 are dependent on Claim 13 and should be found allowable if Claim 13 is found allowable.

Claim 18

Claim 18's differences with respect to Progar are fully detailed in section 2. As is fully detailed in the above response to Claim 1, Chapman also fails to teach tracking a first actual time interval to obtain a first value, then utilizing a comparison value to determine whether or not to track a second actual time interval, wherein if a threshold is reached, further error compensation **will not take place**, as supported by specification paragraphs [0027] and [0028]. Furthermore, combining Kawahara with Chapman and Progar would not result in the system disclosed in Claim 18, as the alarm would be used as a means of knowing when to error compensate with a plurality of accumulated signals, and not as a means of ending error compensation.

Claims 19, 20, 22, and 26

Claims 19, 20, 22, and 26 are dependent on Claim 18 and should be found allowable if Claim 18 is found allowable.

Claim 30

Claim 30's differences with respect to Chapman and Progar are fully detailed in section 3. As to Kawahara, a method is taught wherein an alarm is activated when a threshold is reached; however, combining Kawahara with Chapman and Progar would not result in the system disclosed in Claim 1, as the alarm for indicating when the threshold value is reached would be used as a means of knowing when to error compensate with a plurality of accumulated signals, and not as a means of ending error compensation.

Claims 31, 32, and 34

Claims 31, 32, and 34 are dependent on Claim 30 and should be found allowable if Claim 30 is found allowable.

6. Claim rejections – 35 U.S.C. 103(a)

Claims 4, 16, 21, and 33 were rejected under 35 U.S.C. 103(a) as being unpatentable over Kawahara in view of Chapman and Progar and further in view of Lode.

Response

Claims 4, 16, 21, and 33 are dependent on Claims 1, 13, 18, and 30 respectively. As the applicant believes Claims 1, 13, 18, and 30 have all been placed in positions for allowance as per arguments detailed in the above sections, Claims 4, 16, 21, and 33 should also be found allowable.

7. Claim rejections – 35 U.S.C. 103(a)

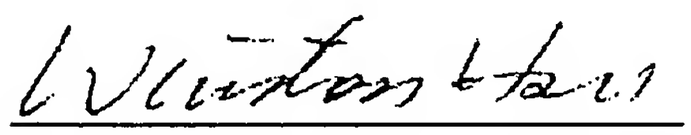
Claims 6 and 23 were rejected under 35 U.S.C. 103(a) as being unpatentable over Kawahara in view of Chapman and Progar and further in view of Hirose.

Response

Claims 6 and 23 are dependent on Claims 1 and 18 respectively. As the applicant believes Claims 1 and 18 have both been placed in positions for allowance as per arguments detailed in the above sections, Claims 6 and 23 should also be found allowable.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Sincerely yours,



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